

IN THE SPECIFICATION

* Please amend the specification as shown below. Material inserted is indicated by underlining.

1) Please replace the paragraph located at page 17, lines 1-2 with the following:

--B. 9-[N-[2-(5,5-dimethyl-[1,3,2]dioxaborinan-2-yl)benzyl]-N-[3-(methacrylamido)propylamino]methylantracene.--

2) Please replace the paragraph located at page 17, lines 24-26 with the following:

--C. Water soluble copolymer of 9-[N-[2-(5,5-dimethyl-[1,3,2]dioxaborinan-2-yl)benzyl]-N-[3-(methacrylamido)propylamino]methylantracene and MAPTAC (1:20 molar ratio).--

3) Please replace the paragraph located at page 17, line 27 to page 18, line 6 with the following:

--To a solution of 9-[N-[2-(5,5-dimethyl-[1,3,2]dioxaborinan-2-yl)-benzyl]-N-[3-(methacrylamido)propylamino]methylantracene (0.0490 g, 0.105 mmole) and [3-(methacrylamido)propyl]-trimethylammonium chloride (MAPTAC, 50 wt % aqueous solution, 0.48 g, 0.90 mL, 2.1 mmole, 20 equiv.) in 1.5 mL ethylene glycol was added 4,4'-azobis(cyanovaleric acid) (0.008 g, 0.03 mmole, 1.4 mole % of total monomer). The solution was purged with argon gas for 5 min and then heated to 60°C in the dark for 18 hours. At this time, the viscous solution was cooled

to 25°C, diluted with 5 mL water and dialyzed through a cellulose acetate membrane (MWCO 3500) against 3 x 4 L of water. The dialyzed material was concentrated to dryness to yield 0.339 g (68%) of a yellow glassy solid.--

4) Please replace the paragraph located at page 20, lines 2-3 with the following:

--B. 9,10-bis[N-[2-(5,5-dimethyl-[1,3,2]dioxaborinan-2-yl)-benzyl]-N-[2-(2-hydroxyethoxy)ethylamino]methyl]anthracene.--

5) Please replace the paragraph located at page 21, lines 10-14 with the following:

--C. 9-[N-[2-(5,5-dimethyl-[1,3,2]dioxaborinan-2-yl)-benzyl]-N-[2-(2-methacroyloxyethoxy)ethylamino]methyl]-10-[N-[2-(5,5-dimethyl-[1,3,2]dioxaborinan-2-yl)-benzyl]-N-[2-(2-hydroxyethoxy)ethylamino]-methyl]anthracene. (Single-methacrylate monomer)--

6) Please replace the paragraph located at page 21, line 15 to page 22, line 5 with the following:

--A solution of 9,10-bis[N-[2-(5,5-dimethyl-[1,3,2]dioxaborinan-2-yl)-benzyl]-N-[2-(2-hydroxyethoxy)ethylamino]methyl]anthracene (0.298 g, 0.359 mmole), methacrylic acid (0.304 g, 0.300 mL, 3.53 mmole, 9.84 equiv.), DCC (0.965 g, 4.68

mmole, 13.0 equiv.) and N,N-dimethyl-aminopyridine (0.020 g, 0.16 mmole, 0.46 equiv.) in 15 mL CH₂Cl₂ at 23°C was stirred in the dark for 4 hours. At this time, the reaction mixture was filtered and concentrated by rotary evaporation. The residue was purified by alumina column chromatography (50 g activated neutral alumina, 0-4% CH₃OH/CH₂Cl₂) to yield 0.150 g (47%) of a yellow solid.--

7) Please replace the paragraph located at page 22, lines 18-22 with the following:

--D. Water soluble copolymer of 9-[N-[2-(5,5-dimethyl-[1,3,2]dioxaborinan-2-yl)benzyl]-N-[2-(2-methacroyloxyethoxy)-ethyl-amino]methyl]-10-[N-[2-(5,5-dimethyl-[1,3,2]dioxaborinan-2-yl)-benzyl]-N-[2-(2-hydroxyethoxy)-ethylamino]-methyl]anthracene and TMAMA (1:50 molar ratio).--

8) Please replace the paragraph located at page 22, line 23 to page 23, line 9 with the following:

--To a solution of [2-(methacryloxy)ethyl]trimethyl-ammonium chloride (TMAMA, 70 wt% aqueous solution, 0.344 g monomer, 1.66 mmole, 50 equiv.) in 0.600 mL water was added a solution of 9-[N-[2-(5,5-dimethyl-[1,3,2]dioxaborinan-2-yl)-benzyl]-N-[2-(2-methacroyloxyethoxy)ethylamino]methyl]-10-[N-[2-(5,5-dimethyl-[1,3,2]dioxaborinan-2-yl)benzyl]-N-[2-(2-hydroxyethoxy)ethylamino]methyl]anthracene (0.0024 g, 0.0033 mmole) in 3.00 mL MeOH. To this mixture was added

4,4'-azobis(4-cyanovaleric acid) (0.0075 g, 0.027 mmole, 1.6 mole % of total monomer). The solution was filtered through a 0.45 μ membrane filter, was purged with nitrogen gas and then heated in the dark at 55°C for 16 hours. At this time, the viscous solution was cooled to 25°C and concentrated *in vacuo*. The residue was diluted with 20 mL water and filtered through a 0.2 μ membrane filter. The polymer solution was dialyzed through a cellulose acetate membrane (MWCO 3500) against 2 x 4 L of water. From the dialysis was obtained 38.5 mL of polymer solution. Concentration of a portion of this solution to dryness indicated 0.0075g polymer per 1.0 mL solution. Overall 0.289g (77%) yield of polymer.--

9) Please replace the paragraph located at page 25, lines 2-3 with the following:

--B. 9,10-bis[N-[2-(5,5-dimethyl-[1,3,2]dioxaborinan-2-yl)-benzyl]-N-[2-(tert-butoxycarbonyl)ethylamino]methyl]anthracene.--

10) Please replace the paragraph located at page 26, lines 8-9 with the following:

--C. 9,10-bis[N-(2-boronobenzyl)-N-~~[3-(propanoyl)]~~ 2-(carboxyethyl)amino]-methyl]anthracene.--

11) Please replace the paragraph located at page 26, lines 10-17 with the following:

--A solution of 9,10-bis[N-[2-(5,5-dimethyl-[1,3,2]dioxaborinan-2-yl)benzyl]-N-[2-(tert-butoxycarbonyl)ethyl-

amino]methyl]anthracene (0.556 g, 0.620 mmole) in 5 mL 20% TFA/CH₂Cl₂ at 23°C was stirred in the dark for 25 hours. At this time, the reaction mixture was concentrated under a stream of N₂ gas. The residue was triturated with 3 x 10 mL portions of ether. The residual solid was dried *in vacuo* to yield 0.351g (87%) of a fluffy yellow powder.--

12) Please replace the paragraph located at page 29, lines 5-7 with the following:

--B. 9,10-bis[N-[2-(5,5-dimethyl-[1,3,2]dioxaborinan-2-yl)benzyl]-N-[3-(methacrylamido)propylamino]methylantracene. (Dual-methacrylamide monomer)--

13) Please replace the paragraph located at page 30, line 13 to page 31, line 2 with the following:

--A solution of N,N-dimethylacrylamide (40% wt.) and N,N'-methylenebisacrylamide (0.8% wt.) in ethylene glycol was prepared. 9,10-bis[N-[2-(5,5-dimethyl-[1,3,2]dioxaborinan-2-yl)benzyl]-N-[3-(methacrylamido)propylamino]methylantracene (17.8 mg, 2x10⁻⁵ mole) and 40 µL of aqueous ammonium persulfate (5% wt) were combined with 1 mL of ethylene glycol monomer solution. The resulting solution was placed in a glove box purged with nitrogen. An aqueous solution of N,N,N',N'-tetramethylethylenediamine (80 µL, 5% wt.) was added to the monomer formulation to accelerate polymerization. The resulting formulation was poured in a mold constructed from microscope slides and 100 micron stainless steel spacer. After being kept for 8 hours in nitrogen atmosphere the mold was placed in phosphate buffered saline (PBS) (10 mM PBS, pH=7.4), the microscope slides were separated, and the hydrogel was removed. The hydrogel was washed with 100 mL of PBS containing 1 mM lauryl sulfate sodium salt and 1 mM EDTA sodium salt for 3 days, the solution being changed every day, followed by

washing with DMF/PBS (10/90 by vol., 3 x 100 mL), and finally with PBS (pH=7.4, 3 x 100 mL). The resulting hydrogel polymer was stored in PBS (10 mM PBS, pH=7.4) containing 0.2% wt. sodium azide and 1 mM EDTA sodium salt.--

14) Please replace the paragraph located at page 34, lines 33-34 with the following:

--E. N-2-[5 6-(N-4-dimethylaminobenzyl)aminoethyl]aminoethyl)-4-butylamino-1,8-naphthalimide.--

15) Please replace the paragraph located at page 36, lines 1-4 with the following:

--F. N-2-[5 6-(N-4-dimethylaminobenzyl)-5 6-[2-(5,5-dimethyl-[1,3,2]dioxaborinan-2-yl)benzyl]aminoethyl)-[2-(5,5-dimethyl-[1,3,2]dioxaborinan-2-yl)benzyl]-aminoethyl-4-butylamino-1,8-naphthalimide.--

16) Please replace the paragraph located at page 36, lines 5-15 with the following:

--To a solution of N-2-[5 6-(N-4-dimethylaminobenzyl)-aminoethyl]aminoethyl)-4-butylamino-1,8-naphthalimide (0.150 g, 0.276 mmole) and DIEA (0.355 g, 0.478 mL, 2.81 mmole, 10.0 equiv.) in 5 mL CHCl₃, was added a solution of (2-bromomethylphenyl)boronic acid neopentyl ester (0.390 g, 1.38 mmole, 5.00 equiv.) in 2 mL CHCl₃. The solution was subsequently stirred at 25°C for 27 hours. At this time, the mixture was concentrated and the residue was purified by alumina column chromatography (100 g activated neutral alumina, 0-5% CH₃OH/CH₂Cl₂) to yield 0.024 g (19%) of a viscous brown oil.--

17) Please replace the paragraph located at page 37, lines 1-4 with the following:

--G. N-2-[5 6-(N-4-dimethylaminobenzyl)-5 6-[2-(borono)benzyl]aminoethyl]-[2-(borono)benzyl]amino-

ethyl-4-butylamino-1,8-naphthalimide (nBuF-hexa-Q bis-boronate).--

18) Please replace the paragraph located at page 37, lines 5-10 with the following:

--The free bis boronic acid product used in glucose studies results from dissolution of N-2-[5 6-(N-4-dimethyl-aminobenzyl)-5 6-[2-(5,5-dimethyl-[1,3,2]dioxaborinan-2-yl)-benzyl]amino-hexyl]-[2-(5,5-dimethyl-[1,3,2]dioxaborinan-2-yl)-benzyl]aminoethyl-4-butylamino-1,8-naphthalimide in the MeOH/PBS buffer system.--

19) Please replace the paragraph located at page 38, lines 1-7 with the following:

--Example 6

Effect of glucose or lactate on acrylamide gel containing N-[3-(methacrylamido)propyl]-3,4-dihydroxy-9,10-dioxo-2-anthracenesulfonamide (Alizarin Red S monomer) and α,α' -bis[N-[2-(5,5-dimethyl-[1,3,2]dioxaborinan-2-yl)-benzyl]-N-[3-(methacrylamido)propylamino]-1,4-xylene (bis boronic acid monomer):--

20) Please replace the paragraph located at page 39, lines 34-35 with the following:

--D. α,α' -bis[N-[2-(5,5-dimethyl-[1,3,2]dioxaborinan-2-yl)-benzyl]-N-[3-(methacrylamido)propylamino]-1,4-xylene.--

21) Please replace the paragraph located at page 40, lines 27-31 with the following:

--E. Preparation of acrylamide gel containing N-[3-(methacrylamido)propyl]-3,4-dihydroxy-9,10-dioxo-2-anthracenesulfonamide (Alizarin Red S monomer) and α,α' -bis[N-[2-(5,5-dimethyl-[1,3,2]dioxaborinan-2-yl)benzyl]-N-[3-(methacrylamido)propylamino]-1,4-xylene:--

22) Please replace the paragraph located at page 40, line 32 to page 41, line 24 with the following:

--Ethylene glycol solution containing 30% wt. acrylamide and 0.8% wt. N,N'-methylenebisacrylamide was prepared. N-[3-(methacrylamido)propyl]-3,4-dihydroxy-9,10-dioxo-2-anthracenesulfonamide (1.5 mg, 3.38×10^{-6} mole) and α,α' -bis[N-[2-(5,5-dimethyl-[1,3,2]dioxaborinan-2-yl)benzyl]-N-[3-(methacrylamido)propylamino]-1,4-xylene (28 mg, 3.54×10^{-5} mole) were combined with 800 μ L of ethylene glycol monomer solution and 40 μ L of 5% wt. aqueous ammonium persulfate. This formulation was placed in a glove box purged with nitrogen along with a mold constructed from glass microscope slides and 100 micron stainless steel spacer. An aqueous solution of N,N,N',N'-tetramethylethylenediamine (40 μ L, 5% wt.) was added to the monomer solution to accelerate polymerization and the final formulation was poured into a glass mold. The mold was left under nitrogen atmosphere for 16 hours, after which it was immersed in PBS (pH=7.4) and the glass slides were separated to afford a hydrogel polymer in a form of a thin film. The resulting hydrogel thin film was washed with 100 mL of phosphate buffered saline containing 1 mM lauryl sulfate sodium salt for 3 days, the solution being changed every day, followed by washing with MeOH/PBS (20/80 by vol., 3 x 100 mL), and finally with PBS (pH=7.4, 3 x 100 mL). Hydrogel polymer was stored in PBS (10 mM PBS, pH=7.4) containing 0.2% wt. sodium azide and 1 mM EDTA sodium salt.--

23) Please replace the paragraph located at page 42, lines 20-26 with the following:

--The modulation of the fluorescence of an acrylamide gel synthesized substantially in accordance with this Example 6 (except that 1.9 mg of N-[3-(methacrylamido)propyl]-3,4-dihydroxy-9,10-dioxo-2-anthracenesulfonamide and 35 mg of α,α' -bis[N-[2-(5,5-dimethyl-[1,3,2]dioxaborinan-2-yl)benzyl]-N-[3-(methacrylamido)propylamino]-1,4-xylene (28 mg, 3.54×10^{-5} mole) were combined with 800 μ L of ethylene glycol monomer solution and 40 μ L of 5% wt. aqueous ammonium persulfate. This formulation was placed in a glove box purged with nitrogen along with a mold constructed from glass microscope slides and 100 micron stainless steel spacer. An aqueous solution of N,N,N',N'-tetramethylethylenediamine (40 μ L, 5% wt.) was added to the monomer solution to accelerate polymerization and the final formulation was poured into a glass mold. The mold was left under nitrogen atmosphere for 16 hours, after which it was immersed in PBS (pH=7.4) and the glass slides were separated to afford a hydrogel polymer in a form of a thin film. The resulting hydrogel thin film was washed with 100 mL of phosphate buffered saline containing 1 mM lauryl sulfate sodium salt for 3 days, the solution being changed every day, followed by washing with MeOH/PBS (20/80 by vol., 3 x 100 mL), and finally with PBS (pH=7.4, 3 x 100 mL). Hydrogel polymer was stored in PBS (10 mM PBS, pH=7.4) containing 0.2% wt. sodium azide and 1 mM EDTA sodium salt.--

benzyl]-N-[3-(methacrylamido)propylamino]-1,4-xylene were used) was determined.--

24) Please replace the paragraph located at page 47, lines 11-15 with the following:

--C. 9-[N-[2-(5,5-dimethyl-[1,3,2]dioxaborinan-2-yl)benzyl]-N-[3-(methacrylamido)propylamino]methyl]-10-[N-[2-(5,5-dimethyl-[1,3,2]dioxaborinan-2-yl)benzyl]-N-[2-(2-hydroxyethoxy)-ethylamino]methyl]anthracene. (Single-methacrylamide monomer)--

25) Please replace the paragraph located at page 49, lines 7-8 with the following:

--A. 9,10-bis[N-[2-(5,5-dimethyl-[1,3,2]dioxaborinan-2-yl)benzyl]-N-[2-(2-methacroyloxyethoxy)ethylamino]-methyl]anthracene.--

26) Please replace the paragraph located at page 49, lines 9-22 with the following:

--A solution of 9,10-bis[N-[2-(5,5-dimethyl-[1,3,2]dioxaborinan-2-yl)benzyl]-N-[2-(2-hydroxyethoxy)-ethylamino]methyl]-anthracene (0.100 g, 0.120 mmole; see Example 2), methacrylic acid (0.112 g, 0.110 mL, 1.30 mmole, 10.8 equiv.), DCC (0.316 g, 1.53 mmole, 12.8 equiv.) and N,N-dimethylamino-pyridine (0.014 g, 0.11 mmole, 0.92 equiv.) in 5 mL CH₂Cl₂ was stirred at 0°C for 1 hour, then 23°C for 22 hours. At this time, the reaction mixture was filtered and concentrated by rotary evaporation. The residue was purified by alumina column chromatography (30 g activated neutral alumina, 0-2% CH₃OH/CH₂Cl₂) to yield 0.030 g (26%) of a yellow solid. This compound may be co-polymerized with a suitable monomer as described previously, deprotected, and used to detect glucose.--

27) Please replace the paragraph located at page 51, lines 5-6 with the following:

--B. 9,10-bis[N-[2-(5,5-dimethyl-[1,3,2]dioxaborinan-2-yl)benzyl]-N-[5-(t-BOC)-aminopentylamino]methyl]anthracene.--

28) Please replace the paragraph located at page 52, lines 4-13 with the following:

--9,10-bis[N-[2-(5,5-dimethyl-[1,3,2]dioxaborinan-2-yl)benzyl]-N-[5-(t-BOC)-aminopentylamino]methyl]anthracene (0.4 g, 0.39 mmole) was dissolved in 20 ml of CH₂Cl₂/TFA (80/20 % vol.). The solution was stirred for 12 hours, the solvent was evaporated, and the residue was washed with 10 ml of ether. A total of 373 mg of solid was obtained (72% yield). Product was ~80% pure by RP-HPLC. This compound may be co-polymerized with a suitable monomer as described previously, deprotected, and used to detect glucose.--